



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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H1  
11/26/91

Applicant: Jerome H. Lemelson

Art Unit 111

Serial No: 07/696,747

Examiner: P. Rosenberg

Filed: 5/7/91

For: REACTION APPARATUS  
AND METHOD

Hon. Commissioner of  
Patents and Trademarks

Washington, D.C. 20231

R E S P O N S E

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Sir:

This is a response to the Office Letter dated 8/22/91.

Please amend the above identified application as follows:

IN THE SPECIFICATION

Under "Abstract of the Disclosure":

line 1, correct "methof" to --method--.

line 19, correct "wuch" to --such--.

line 20, change "subjected" to --subject same--.

line 21, substitute --or-- for the coma.

CERTIFICATE OF MAILING

This document mailed to  
the USPTO on Nov. 19, 1991  
by [Signature] date 11/19/91

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IN THE CLAIMS

Please amend the claims as follows:

Claim 1

- ~~line 7~~ after "heat" add --energy--.
- ~~line 10~~ cancel "to occur"
- ~~line 11~~ change "effect" to --cause--.

Claim 2

- ~~line 3~~ cancel "said" first occurrence.

Claim 3

- ~~line 2~~ substitute --includes-- for "is".

Claim 4

- ~~line 2~~ after "and" add --is--.

Claim 8

- ~~line 2~~ cancel "is".

Claim 16

- ~~line 10~~ substitute --effect-- for "allow".

R E M A R K S

Claims 1-20 stand rejected under 35 U.S.C. 102(b) as anticipated by U.S. Patent 3,429,691 to McLaughlin filed Aug. 19, 1966. In this connection applicant notes that he made the broad instant claimed invention prior to August 19, 1966 as indicated in his parent application serial number 422,875 filed Nov. 25, 1964, now U.S. Patent 3,461,347 and in notebook disclosures which were witnessed by a number of people who understood the notebook disclosures and the inventions defined thereby.

Submitted herewith is a Declaration by applicant which, together with the accompanying Exhibit A enables applicant to properly swear back of McLaughlin and it is requested that such reference be withdrawn.

To complete this response, applicant notes that the reference McLaughlin, even if it were a proper reference which it is not, fails to disclose or suggest many of the novel features of the instant claimed invention which are set forth in the claims currently under prosecution.

As noted in applicant's executed Declaration submitted herewith, applicant may also rely on disclosures found in the specification of his parent application serial number 422,875, now U.S. patent 3,461,347 which he filed on November 25, 1964 before the filing date of McLaughlin. Such disclosures include the heating of metal by means of the energy of an electron beam (a plasma stream), which beam is generated by applying high voltage electrical energy across or between electrodes of an electron gun. Such heating of metal which is in movement past or through the electron beam in the presence of a chemical, results in a chemical reaction and change in the chemical composition of the metal such as the formation of an oxide thereof. The chemical process takes place over a period of time and, as a result of relative scanning movement between the electron beam or plasma and the reaction material, the chemically converted material is carried<sup>and</sup> relatively moved from the scanning axis of

the electron beam to permit progressing amounts of such material to be formed on different areas of a substrate as taught in the '347 patent. The oxidizing atmosphere defined by vaporous fluorine or hydrogen fluoride disclosed in the '347 patent specification (see col. 11 lines 25-30 and other portions of the specification) constitutes a flow of particles to the reaction chamber (e.g. lines 25 ff. specify.. "in which chamber an oxidizing carrier of fluorine such as hydrogen fluoride or elemental fluorine...is continuously introduced...."). The wire or strip of metal is also moved through the chamber while a surface portion thereof is heated in the plasma defined by the electron beam and the particles of oxidizing material to effect a (chemical) reaction wherein the products of such reaction (e.g. the oxidized material of the metal wire or strip and the resulting chemically converted waste gas or vapor) are continuously carried from the chamber (see lines 36-40 of col. 11).

At col. 8 lines 34 ff. of the '347 patent applicant teaches introducing (particles of) vaporized metal and (particles of) an oxidizing vapor or gas such as hydrogen fluoride "simultaneously" to cause a chemical reaction in a reaction chamber and to form a new compound thereof ...and notes that "the metal may actually reach the surface of the board in a partially or completely converted or oxidized state" (see lines 40-44 column 8). In light of the disclosures found at lines 21 ff of column 11 of the specification of the '347 patent to employ an electron beam to heat the material subjected to the highly reactive fluorine or hydrogen fluoride vapor , there is teaching in such patent to (a) pass a reaction material (metal in the form of a wire, strip or vapor defining particles) into a reaction chamber, (b) flow particles of a vapor or gas of highly reactant material (such as hydrogen fluoride or fluorine ) into such chamber and intersect both with an electron beam which forms or defines a plasma containing particles of such highly reactant vapor and which serves to transfer sufficient radiant energy to the wire or particles of metal to form a new compound (an oxide of the metal) of either the

entire/<sup>or partial</sup> amount of metal (line 44 col.8 which indicates that the metal is either "partially or completely converted" to the oxide.

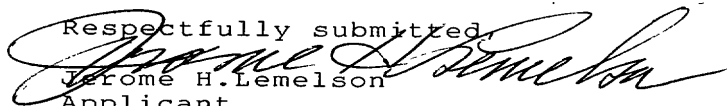
Since applicant teaches in his U.S. Patent 3,461,347, which has a filing date predating that of McLaughlin, the broad process elements of the instant claimed invention and continued such process in a chain of patent applications leading to the instant application as set forth in the CROSS REFERENCE TO RELATED APPLICATIONS of the instant application, the filing of application serial number 422,875 on November 25, 1964 is a basis itself to permit applicant to swear back of McLaughlin U.S. Patent 3,429,691. Further evidence of such right is had by applicant's notebook disclosures defined by the accompanying Declaration and Exhibit A.

It is briefly noted that McLaughlin employs a plasma to heat and reduce titanium dioxide to elemental titanium by causing particles of titanium oxide to become droplets which react with hydrogen to form water vapor and titanium. In applicant's basic process, particles of metal, such as defined by metal vapor and/or particles of a vapor of a highly reactive element or compound such as fluorine and hydrogen fluoride, enter an electron beam and form a plasma therewith and are heated by the energy of the beam or plasma to react and form an oxide of the metal. Applicant discloses in his notebook and in his parent '347 patent to carry out his process continuously and to carry or move the reaction material(s) from the vicinity of the reaction zone or reaction chamber. Such broad invention was made by applicant substantially before McLaughlin filed his patent application on August 19, 1966.

Further and favorable action is respectfully solicited.

Please note of record applicant's new mailing address indicated below and the Petition to Make Special and Declaration based on applicant's age as set forth in MPEP 708.02(IV) and 37 C.F.R.

Respectfully submitted,

  
Jerome H. Lemelson

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